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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,432	04/30/2001	Neil Benjamin	LAM-P0808	4586

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EXAMINER

PAIK, SANG YEOP

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 12/02/2003

141

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
09/846,432	BENJAMIN ET AL.	
Examiner	Art Unit	
Sang Y Paik	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 33-38 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 33-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al (US 6,084,215) in view of Kholodenko et al (US 6,310,755).

Furuya et al discloses the structure claimed including a temperature controlled base (92), a thermal insulator (93) made of polymer, a flat support (91) with a heater embedded therein. However, Furuya et al does not teach that the flat support receiving an incoming heat flux from a plasma.

Kholodenko et al shows an electrostatic chuck which receives the heat flux generated from a plasma to further provide the means to heat the chuck. Kholodenko et al shows that the chuck is also provided with an electrical heater and a thermo sensor to provide the desired heating across the chuck. In view of Kholodenko et al, it would have been obvious to one of ordinary skill in the art to Furuya et al with the plasma heating flux as an additional heating means to further provide the uniform heat across the chuck.

With respect to claims 2 and 3, Furuya et al shows a thermal conductor (2) disposed between the flat support and a work piece, and the thermal conductor further comprises a nitrogen gas provided by the gas inlet (22) to introduce gas thereto. While Furuya et al does not show the gas to be helium gas, it would have been obvious to one of ordinary skill in art to

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introduce nitrogen or helium gas to provide the heat transfer gas that can provide good thermal conductivity between the workpiece and the heating support such as the flat support.

3. Claims 5-9 and 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al in view of Kholodenko et al et al as applied to claims 1-4 above, and further in view of Mahawili (US 5,059,770) or Carman et al (US 5,294,778)

Furuya et al in view of Kholodenko et al discloses all the structure and method claimed except the heater having a plurality of planar heating elements.

Mahawili or Carman et al shows a workpiece heating apparatus having a plurality of heating elements with a plurality of sensor that are independently controlled to measure the respective heating zones. In view of Mahawili or Carman et al, it would have been obvious to one of ordinary skill in the art to adapt Furuya et al, as modified by Kholodenko et al, with a plurality of heating elements and sensors to control the respective heating zones to achieve the desired heating temperature across the heating plate.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al in view of Kholodenko et al as applied to claims 1-4 above, and further in view of Weber (US 4,518,848).

Furuya et al in view of Kholodenko et al discloses all the structure claimed except the heater being an etched foil.

Weber shows an electric heating element in the formed of an etched foil. In view of Weber, it would have been obvious to one of ordinary skill in the art to use an etched foil as an alternative heating formation to provide for the heating element on a heating plate to produce the desired high temperature and uniform heating across the heating plate.

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5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al in view of Kholodenko et al as applied to claims 1-4 above, and further in view of Yoshida et al (US 6,080,970).

Furuya et al in view of Kholodenko et al discloses all the structure claimed except the support comprising a high temperature non-electrically conductive material.

Yoshida et al shows a plane heater having a heating embedded in a support member comprising ceramic material. In view of Yoshida et al, it would have been obvious to one of ordinary skill in the art to adapt Furuya et al, as modified by Kholodenko et al, with the support member having the high-temperature non-electrically conductive material to not only electrically insulate the electrically resistive heating element but also produce high temperature necessary to sufficiently treat the workpiece.

Response to Arguments

6. Applicant's arguments filed 11/3/03 have been fully considered but they are not persuasive.

The applicant argues that the applied prior art, Furuya and Kholodenka, are not combinable because the device in Furuya et al is used in absence of a plasma process and that its device is not designed for use during a process in a plasma chamber. The applicant argues that since Furuya discloses using a storage chamber, and no additional heating flux from a plasma processing is used or shown, the references are not combinable. The Kholodenka reference, which is used to teach the plasma process, is in the same field of endeavor with the Furuya reference, which is in the field of heating and processing semiconductor wafers. Furuya et al does not show using a plasma process, but such absence does not necessarily teach away one

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from using the plasma process. In the plasma process, an additional heating source is used in addition to a hot plate. The advantage of having the additional heating source is provided in Kholodenka. Being in the same field of endeavor, these references are analogous art allowing one of ordinary skill in the art to take advantages from each reference.

The applicant further argues that since the operating temperature in Furuya is at 110 degrees, the device of Furuya is not designed for use during a process in a plasma chamber as in Kholodenka which uses has the operating temperature of up to 600 degree. Kholodenka shows that the wafer substrate is heated or maintained at the operating temperature from about 25 to 500 degrees (see column 10, lines 20-21). This indicates that the heating device of Kholodenka uses a varying heating temperature that is well below 110 degrees. This indicates that Furuya can be adapted with additional heater as shown with Kholodenka. Thus, the applicant's arguments are not deemed persuasive.

7. This is a continuation application. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 703-308-1147. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

S. R.

Sang Y Paik
Primary Examiner
Art Unit 3742

syp